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Texas Agricultural Extension Service

Understanding Your Local Economy: Estimating Community Income Multipliers

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Income multipliers are used to estimate the total change in community income resulting from a new or expanded economic activity. For example, proponents of attracting new industrial plants to a community can use an income multiplier to partially estimate the economic impact of a new facility.

While multiplier analysis is well-accepted and logical, users have to be especially careful to correctly calculate an income multiplier at the community level.

Calculating an Income Multiplier

In order to accurately estimate a community income multiplier it is necessary to understand what happens to income when it is received by someone within the community.

While multiplier analysis is well-accepted and logical, users have to be especially careful to correctly calculate an income multiplier at the community level.

Consumers (households) receive income as a combination of wages, salaries, retirement income, interest, public assistance payments, dividends, profits, rent and gifts. They use their income for savings and investments, tax payments and consumption purchases. Businesses receive income from customers in exchange for goods and services and disburse it to governments, employees, suppliers, investors and retain a portion as business savings for additional investment.

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Any of the household or business income that is not spent in the local economy is a "leakage" and reduces the community income multiplier. Easily recognized examples include out-of-town expenditures by consumers, federal income tax payments by either consumers or businesses, wages and salaries paid to commuters from other towns, and license fees and sales tax payments to state government.

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Another important leakage occurs when retail businesses purchase inventory items from out-of-town suppliers. In the majority of Texas communities consumer items ranging from automobiles to zippers have to be imported. Thus, a multi-thousand dollar automobile purchased locally may, in fact, result in only a few hundred dollars (depending upon the profit margin) remaining in the local economy after the dealer pays the producer of the car.

Savings may or may not be a leakage. If savings are deposited in local financial institutions and are in turn, borrowed by local consumers and businesses, the dollars may remain in the local economy (depending on where the borrowers spend the money). However, if savers or the financial institutions send the savings out-of-town as they make their decisions on what to do with the funds, savings are a leakage and the community income multiplier is reduced. A healthy, growing local economy has a greater chance of containing sufficient investment opportunities and borrowers to keep savings "at home" than does a stagnant economy.

As an example of how to calculate an income multiplier, assume that an average household in a community uses 20 percent of its income to pay federal income taxes, spends 25 percent of its income in other towns, and saves 5 percent of its income. Therefore, each $1,000 of household income would be allocated as follows:

Household income	**$1,000**
Less: (leakages from local spending)	
Federal income taxes (20%)	$200
Spending in other towns (25%)	250
Savings (5%)	50
TOTAL LEAKAGES	**$500**
Equals: Spent with local businesses	**$500**

Thus far in this example, leakages equal to 50 percent of the household income have resulted from these assumptions. As noted earlier, additional leakages occur after local businesses receive the income from households. Assume these leakages from the business sector (as a percentage of business income) are: 10 percent for state and federal taxes, 40 percent for inventory purchased from suppliers in other cities and 5 percent paid to employees living in other towns. Therefore, the $500 of household income spent with local businesses would be disbursed as follows:

Local business income (from the example above)	**$500**
Less: (leakages)	
State and federal taxes (10%)	$50
Inventory purchases (40%)	200
Salaries to non-residents (5%)	25
TOTAL LEAKAGES	**$275**
Equals: Income to local residents (Employees and investors)	**$225**

The result is, even in this relatively simple example that doesn't include all of the leakages occurring in many Texas communities, only 22.5 percent ($225 of the original $1,000) of household income remains in the local economy to become income for other residents.

The formula to calculate the community income multiplier is 1/(1–X) where X is the percentage (or fraction) of consumer spending that remains in town. The multiplier is 1.29 in this example [1/(1–.225) = 1.29]. If this multiplier is a community average, it means that each dollar entering the community from an outside source will increase total community income $1.29.

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This multiplier (1.29) is much smaller than those that are often used. Many community impact studies use multipliers ranging from 3 to 7. One reason for the difference, particularly for studies that use multipliers in the 3 and 4 range, is that regional or state income multipliers are assumed to be applicable at community level. This assumption is incorrect because it does not recognize that many consumers and businesses in a community purchase a large portion of their merchandise and services from out-of-town suppliers that are located within the region: multipliers for smaller geographic markets are logically smaller than multipliers for bigger geographic markets.

The Income Multiplier and Turnover

An additional reason that community income multipliers are overestimated, especially in those studies using multipliers in the 5 to 7 range, is that multipliers have been confused with "turnover." Figure 1 (see back page) and Table 1 show the difference. For ease of illustrating and calculating, it is assumed that 50 percent of the average household's income remains in the community's income stream after each income-spending cycle (turnover).

As Figure 1 shows, turnover is a measure of the number of times that a portion of income received is spent and, in turn, received by local residents before becoming insignificantly small. However, the amount of income that is respent in the community during each turnover becomes progressively smaller as income leaks from the local economy. Figure 1 shows how a turnover of 7 or larger is consistent with a much smaller income multiplier. Table 1 shows that the income multiplier in this example is 2. Anyone using multiplier analysis must understand the difference to have credible results.

Table 1. Calculation of Income Multiplier

Initial Inflow of Income	$1.00
First Turnover	.50
Second Turnover	.25
Third Turnover	.125
Fourth Turnover	.0625
Fifth Turnover	.03125
Sixth Turnover	.0156
Seventh and Subsequent Turnovers	.0157
TOTAL SPENDING (Income)	**$2.00**

Calculation using the formula:

$$\textbf{Income Multiplier} = \frac{1}{1-X} = \frac{1}{1-.5} = \frac{1}{.5} = 2$$

Implications

The fact that income multipliers are smaller than many community leaders have been led to believe has positive and negative implications. The negative implication is that successful economic development efforts have less impact on total community income than expected. Retail sales will be lower than estimated with a large multiplier and sales tax revenues will be less for governmental units.

The positive implications are the suggested economic development alternatives. Three interdependent major strategies are implied: (1) increase the income multiplier by maximizing local consumer spending, (2) increase the income multiplier by encouraging new manufacturing, processing, and service businesses and reduce their out-of-town expenditures and (3) increase dollar inflows into the community by strengthening and diversifying the economic base (thus giving the multiplier new income to multiply).

Multiplier analysis is a useful analytical tool when correctly used. To estimate a community income multiplier it is necessary to make accurate estimates of consumer and business spending patterns and understand how to do the calculation. Using regional and state multipliers or turnover estimates results in errors.

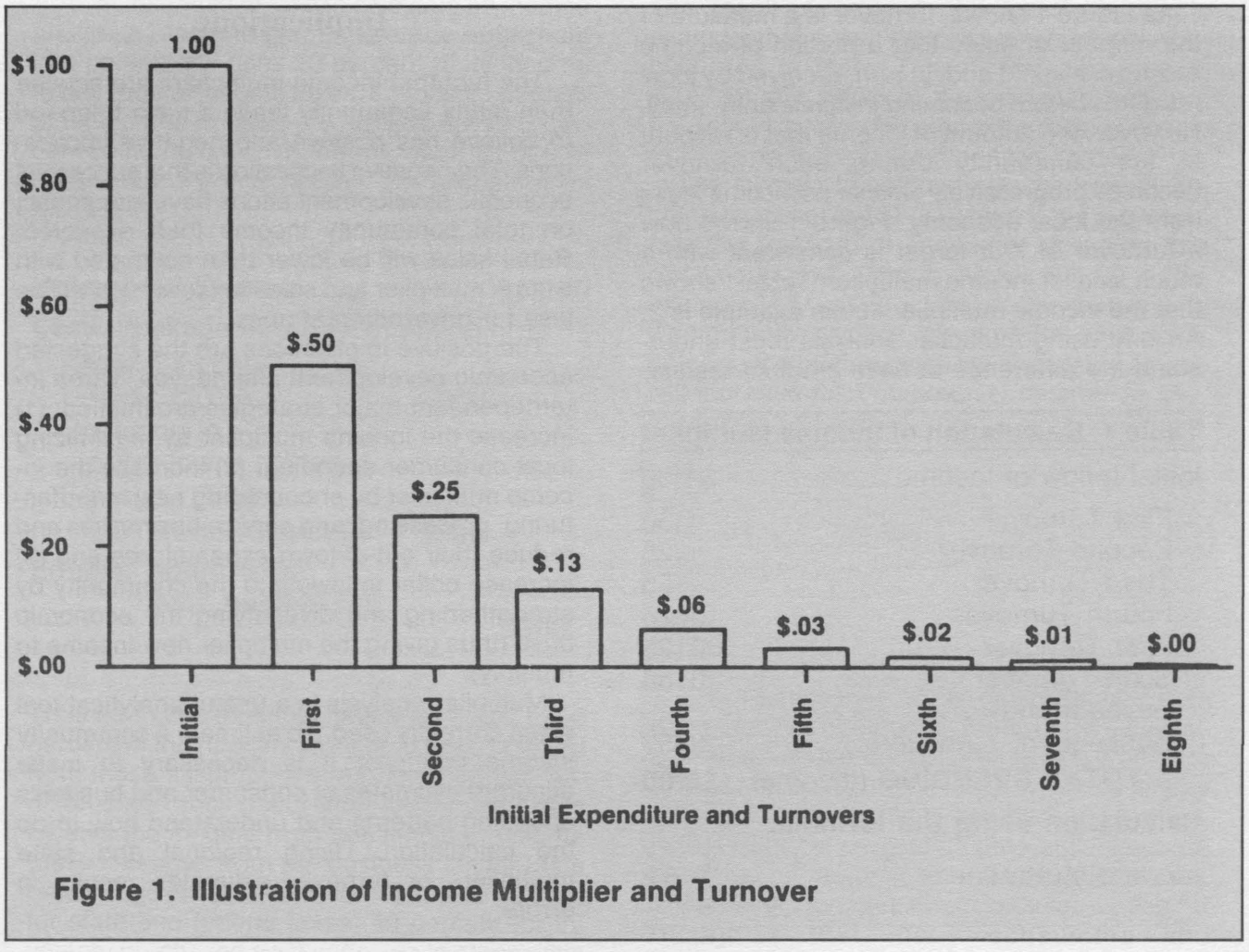

Figure 1. Illustration of Income Multiplier and Turnover

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